

EXHIBIT E

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Analysis of canned tomatoes from two different manufacturers.

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Protocol: Canned tomato fruit from two manufacturers, comprising COLUCCIO S. MARZANO TOMATOES (CMC1 L= B214 SM = DOP SAN MARZANO) and CENTO SAN MARZANO ORGANIC (SL 1 A222 SM BBE = 98/22), were transferred from cans to a table top and arranged in 4 groups, each representing an individual can.

The width and length of each fruit was measured and the obtained value represented in **Table 1** and **Table 2**. The tables show: raw values for width and length 2. Average width and length for each group of fruit, 3. Ratio of length to width for each group and 4. The Grand Ratio, that is, the ratio for width and length for the entire population of tomato fruit from 4 cans of each manufacturer.

Table 3 also shows a comparison between Length/ Width ratio measured in the experimental fruit and in an internet image taken of San Marzano tomatoes, shown in **Figure 1**.

Figure 2 is a visualization of *canned* COLUCCIO S. MARZANO TOMATOES and CENTO SAN MARZANO ORGANIC TOMATOES.

Results. The Grand length to width ratio show higher value (2.439) for the COLUCCIO S. MARZANO (Table 1) than the CENTO SAN MARZANO ORGANIC (1.857) shown in Table 2. These values were compared to length to width ratio of San Marzano and Roma tomatoes (Table 3) in an image shown in Figure 1. It appears that the length to width ratio of COLUCCIO S. MARZANO TOMATOES are close to those of authentic San Marzano fruit while the length to width ratio of the CENTO SAN MARZANO ORGANIC are practically identical to the Roma tomatoes. An additional criterion is the tissue firmness: Authentic San Marzano tomatoes are known for their tissue firmness. This trait was visualized in **Figure 2**. The COLUCCIO S. MARZANO tomatoes appear to be well shaped although with some tissue fragmentation. The CENTO SAN MARZANO ORGANIC appear fragile with extensive tissue fragmentation. Some fruit completely disintegrated, resulting in fewer complete fruit and a higher degree of debris.

The difference in tissue firmness is also manifested by measurement of viscosity: The juice from 4 cans for each manufacturer was combined (around 800 mL), homogenized at low speed for 30 seconds and was next measured for rate of flow through a pipette. The results show that the rate of flow of 28 mL of juice was 1 mL/ minute for juice of COLUCCIO S. MARZANO tomatoes but was 0.683 mL/ minute for the CENTO SAN MARZANO ORGANIC tomato juice. This lower value indicate greater viscosity (resistance to flow) in the latter, apparently because of cell wall debris from disintegrated tissue.

One is led to the conclusions that COLUCCIO S. MARZANO tomatoes are authentic San Marzano variety because of fruit dimensions which comply with traditional shape of these tomatoes and also because of greater tissue firmness.

By this reasoning, the CENTO SAN MARZANO ORGANIC brand appears to resemble the Roma tomatoes.

Table 1. Value for width and length of canned tomato fruit from 4 separate cans of S. MARZANO TOMATOES.

Shown are: 1. values, in millimeters (mm) for width and length of each tomato 2. Average for each group of tomatoes, representing a separate can 3. Ratio of Length to Width for each group and 4. Sum of Ratio Length to Width from 4 groups of tomatoes.

Coluccio S. MARZANO TOMATO
(CMC1 L= B214 SM = DOP SAN MARZANO)

Can 1		Can 2		Can 3		Can 4	
Width (mm)	Length (mm)	Width (mm)	Length (mm)	Width (mm)	Length (mm)	Width (mm)	Length (mm)
34	76	28	80	40	75	40	82
32	75	30	78	40	80	35	80
42	80	36	80	36	65	33	70
43	80	35	80	36	75	38	80
36	70	30	65	28	60	38	80
36	72	32	75	30	65	35	74
31	65	35	70	25	65	30	60
35	80	40	80	29	65	28	65
25	60	30	40	30	90	30	75
40	80	32	80	35	75	30	70
Average	35.4	73.8	32.8	72.8	32.9	71.5	33.7
Ratio	Length / Width		2.113	Length / Width		2.250	2.173
Grand Ratio	Length / Width		2.186				2.208

Table 2. Value for width and length of canned tomato fruit from 4 separate cans of CENTO SAN MARZANO ORGANIC (SL 1 A222 SM BBE = 98/22).

Shown are: 1. values, in millimeters (mm) for width and length of each tomato 2. Average for each group of tomatoes, representing a separate can 3. Ratio of Length to Width for each group and 4. Grand Ratio for Length to Width from 4 groups of tomatoes.

CENTO SAN MARZANO ORGANIC (SL 1 A222 SM BBE = 98/22)

Can 1		Can 2		Can 3		Can 4		
Width (mm)	Length (mm)	Width (mm)	Length (mm)	Width (mm)	Length (mm)	Width (mm)	Length (mm)	
		35	70					
		33	70					
24	70	33	65	35	60			
38	60	28	50	33	55			
35	60	39	75	40	70			
40	55	32	60	35	65	38	70	
40	75	36	70	27	60	38	70	
42	65	37	70	38	70	40	75	
33	60	30	50	37	60	40	75	
33	55	27	50	30	70	26	50	
Average	35.6	62.5	33.0	63.0	34.4	63.8	36.4	68.0
Ratio	Length / Width		1.754			1.909		
Grand Ratio	Length / Width		1.857			1.855		

Table 3. The table show a comparison between Length to Width ratios measure in an image (Figure 3) and measured in canned tomatoes of San Marzano tomatoes and San Marzano Roma Pole tomatoes fruit.

	measured in image*	measured in canned fruit*
Length/ Width Ration		
San Marzano tomato	2.547	2.186
San Marzano Roma Pole tomatoes	1.832	1.857

The values obtained for canned San Marzano tomatoes approach the values measure in the image. The values obtained for canned San Marzano Roma Pole tomatoes are practically the same values measure in the image.

* Each value represents an average of length to width ration measured in 10 individual tomato fruit

Table 4. Weight of seeds collected from 4 cans of two manufacturers

Manufacturer	Weight (mg)
COLUCCIO S. MARZANO TOMATOES	458
CENTO SAN MARZANO ORGANIC	736

Seeds were collected from the juice of 4 cans of each manufacturer were washed, dried at 60 C and weighed at the end of two days.

This information indicated that COLUCCIO S. MARZANO TOMATOES consisted of firmer fruit, which did not readily release seeds upon canning.

CENTO SAN MARZANO ORGANIC tomatoes released more seeds onto the juice, apparently because of less firm fruit tissue which did not stand the rigor of canning and tended to break and allow escape of seeds.

Figure 1. An image showing San Marzano (L) and San Marzano Roma Pole Tomato (R)



San Marzano tomato fruit



San Marzano Roma Pole Tomato fruit

Ratios of length to width, calculated from the image, reveals:

Ratio of **2.547** for San Marzano tomatoes.

Ratio of **1.860** for San Marzano Roma Pole tomatoes.

Figure 2. An image showing canned tomato fruit from Coluccio S. MARZANO TOMATOES (CMC1 L= B214 SM = DOP SAN MARZANO) and CENTO SAN MARZANO ORGANIC (SL 1 A222 SM BBE = 98/22).

The S. Marzano tomatoes appear to be well shaped, firmer and some fragmented tissue (at the bottom of image). The Cento San Mrzano Organic are less well shape, not firm with a significant part of the fruit tissue fragmented (shown at the bottom).



Coluccio S. MARZANO TOMATOES



CENTO SAN MARZANO ORGANIC